

# Homework 4

CMSY-199, Spring 2014

Upload your solution to the Canvas course website as a zip archive file prior to the start of class on Monday, April 7.

1. Add the following member variables to the `Complex` class (Fig. L 8.7) after completing Lab Exercise 3 from chapter 8.

Field	Summary
<code>I</code>	The complex number (0,1)
<code>ONE</code>	The complex number (1,0)
<code>ZERO</code>	The complex number (0,0)

2. Add *set* and *get* methods for the member variables `real` and `imaginary`.
3. Add the following methods to the `Complex` class.

Method Name	Return Type	Description
<code>abs</code>	<code>double</code>	Return the absolute value of a Complex number (aka, modulus or magnitude)
<code>arg</code>	<code>double</code>	Return the argument of a Complex number (aka, phase or angle)
<code>conjugate</code>	<code>Complex</code>	Return the complex conjugate of a Complex number
<code>divide</code>	<code>Complex</code>	Divide two Complex numbers
<code>equals</code>	<code>boolean</code>	Returns true if the real and imaginary parts of <code>obj</code> and <code>this</code> are equal
<code>fromPolar</code>	<code>Complex</code>	Create a Complex number from polar form
<code>multiply</code>	<code>Complex</code>	Multiply two Complex numbers
<code>toPolarString</code>	<code>String</code>	Return String representation of a Complex number in Polar Form

4. Modify the `ComplexTest` class (Fig. L 8.8) to test all of the new members in the `Complex` class.